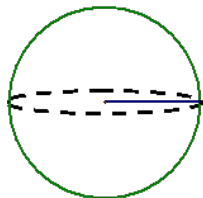
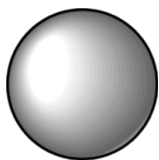


## Spheres

Sphere-The set of all points that are a given distance (radius) to a given point (center).



$$A = 4\pi r^2$$

Ex:

$$r = 4\text{cm}$$

$$V = \frac{4}{3} \pi r^3$$

$$A = 4\pi 4^2 = 64\pi \text{ cm}^2$$

$$V = \frac{4}{3} \pi 4^3 = 85\frac{1}{3} \pi \text{ cm}^3$$

Ex:

$$V = \frac{32000\pi}{3} \text{ cm}^3$$

$$A = 1600\pi = 4\pi 20^2$$

$$\frac{32000\pi}{3} = \frac{4}{3} \pi r^3$$

$$32000 = 4r^3$$

$$8000 = r^3$$

$$20 = r$$

3x✓

Ex:

$$A = 12\pi \text{ cm}^2$$

$$45\pi$$

$$V = \frac{4}{3} \pi (\sqrt{3})^3 = 6.93\pi \approx 21.8 \text{ cm}^3$$

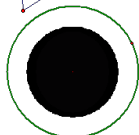
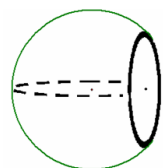
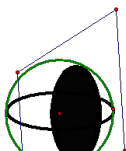
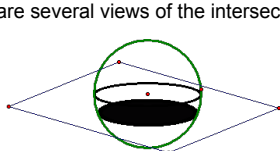
$$12\pi = 4\pi r^2$$

$$12 = 4r^2$$

$$3 = r^2$$

$$\sqrt{3} = r$$

When a sphere and a plane intersect, the intersection is a circle. Try to imagine slicing an orange what two dimensional shape is left where you cut the slice-a circle. Also, imagine pouring water into sphere (but not filling it) what shape is the surface of the water-a circle. Shown are several views of the intersection

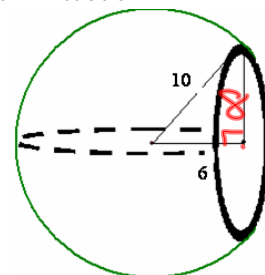


EX:

A plane intersects a sphere 6 cm from the center of the sphere. The radius of the sphere is 10cm. What is the area of the circle formed?

Radius of the circle = 8  
(Pythagorean thm.)

Area of the circle = 64π

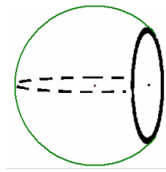


EX:

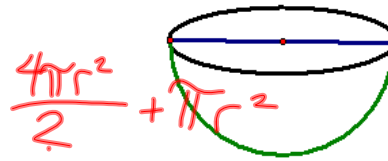
A plane intersects a sphere 3 cm from the center of the sphere. The radius of the sphere is 8cm. What is the area of the circle formed?

Radius of the circle = \_\_\_\_\_  
(Pythagorean thm.)

Area of the circle = \_\_\_\_\_



The great circle occurs when the slice is taken at the hemisphere.



What is the TA of the hemisphere, if the area of the great circle is  $16\pi$ ?

$$A = 3\pi r^2$$

p674 #s 10, 11, 17, 18, 21, 24

p704 #s 9, 10, 13, 15

p674  
10, 11, 17, 18, 21, 24

p704  
9, 10, 13, 15